

CLAIMS

What is claimed is:

- 5 1. A composition of matter suitable for forming gas-permeation barrier articles comprising substantially amorphous millable polyurethane alloyed with rubber.
- 10 2. The composition of matter according to Claim 1, wherein said rubber is admixed with up to about 50% clay.
- 15 3. The composition of matter according to Claim 1, wherein said composition has an oxygen permeability, at 25°C, not greater than about 5.5 cm³ cm/cm² seconds Pascal 10⁻¹³.
- 20 4. The composition of matter according to Claim 1, wherein said millable polyurethane comprises an ether glycol selected from the group consisting of polytetramethylene ether glycol, polyester ether glycols, and polypropylene ether glycols.
- 25 5. The composition of matter according to Claim 1, wherein said rubber is selected from the group consisting of polyisoprene, polybutadiene, and blends thereof.
- 30 6. The composition of matter according to Claim 5, wherein said rubber is polyisoprene.

7. The composition of matter according to Claim 5, wherein said polyisoprene is natural or synthetic.

- 5 8. The composition of matter according to Claim 1, wherein said composition comprises at least 10 weight percent millable polyurethane.

9. The composition of matter according to Claim 1, wherein said
 10 composition comprises at least 40 weight percent millable polyurethane.

10. The composition of matter according to Claim 1, further comprising
 kaolin clay extender, barium sulphate density filler, silicon dioxide curative,
 15 phthalate ester process oil, zinc oxide cure, sulfur curative, n-tert-
 butyl 2-benzothiazolesulfenamide cure aid, diphenyl guanidine accelerator,
 dibasic zinc stearate cure aid, benzothiazyl disulfide accelerator, and zinc
 chloride/MBTS complex cure activator.

- 20 11. An inflatable article of manufacture comprising substantially
 amorphous millable polyurethane alloyed with rubber.

12. The inflatable article of manufacture according to Claim 11, wherein
 25 said rubber is admixed with up to about 50% clay.

13. The inflatable article of manufacture according to Claim 11, wherein
 said composition has an oxygen permeability, at 25°C, not greater than
 30 about $5.5 \text{ cm}^3 \text{ cm/cm}^2 \text{ seconds Pascal } 10^{-13}$.

14. The inflatable article of manufacture according to Claim 11, wherein said millable polyurethane comprises an ether glycol selected from the group consisting of polytetramethylene ether glycol, polyester ether glycols, and polypropylene ether glycols.

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15. The inflatable article of manufacture according to Claim 11, wherein said rubber is selected from the group consisting of polyisoprene, polybutadiene, and blends thereof.

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16. The inflatable article of manufacture according to Claim 15, wherein said rubber is polyisoprene.

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17. The inflatable article of manufacture according to Claim 15, wherein said polyisoprene is natural or synthetic.

20 18. The inflatable article of manufacture according to Claim 15, wherein said composition comprises at least 10 weight percent millable polyurethane.

25 19. The inflatable article of manufacture according to Claim 11, wherein said composition comprises at least 40 weight percent millable polyurethane.

30 20. The inflatable article of manufacture according to Claim 15, further comprising kaolin clay extender, barium sulphate density filler, silicon dioxide curative, phthalate ester process oil, zinc oxide cure, sulfur curative, n-tert-butyl-2-benzothiazolesulfenamide cure aid, diphenyl

guanidine accleerator, dibasic zinc stearate cure aide, benzothiazyl disulfide accelerator, and zinc chloride/MBTS complex cure activator.

- 5 21. The inflatable article of manufacture according to Claim 11, wherein said article is selected from the group consisting of balls, inner tubes, and tubeless tires.
- 10 22. The inflatable article of manufacture according to Claim 11, wherein said inner tube is a bicycle inner tube.
- 15 23. A tennis ball comprising substantially amorphous millable polyurethane alloyed with rubber.
- 20 24. The tennis ball according to Claim 23, wherein said rubber is admixed with up to about 50% clay.
- 25 25. The tennis ball according to Claim 23, wherein said alloy has an oxygen permeability, at 25°C, not greater than about $5.5 \text{ cm}^3 \text{ cm/cm}^2 \text{ seconds Pascal } 10^{-13}$.
- 30 26. The tennis ball according to Claim 23, wherein said millable polyurethane comprises an ether glycol selected from the group consisting of polytetramethylene ether glycol, polyester ether glycols, and polypropylene ether glycols.

27. The tennis ball according to Claim 23, wherein said rubber is selected from the group consisting of polyisoprene, polybutadiene, and blends thereof.

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28. The tennis ball according to Claim 27, wherein said rubber is polyisoprene.

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29. The tennis ball according to Claim 28, wherein said polyisoprene is natural or synthetic.

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30. The tennis ball according to Claim 23, wherein said alloy comprises at least 10 weight percent millable polyurethane.

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31. The tennis ball according to Claim 23, wherein said alloy comprises at least 40 weight percent millable polyurethane.

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32. The tennis ball according to Claim 23, further comprising N330 carbon black, dibutoxyethoxyethyl adipate (DBEEA) plasticizer, zinc stearate accelerator, stearic acid process aid, napthenic process oil, benzothiazyl disulfide (MBTS) accelerator, 2-mercaptobenzothiazole (MBT) accelerator, sulfur and tetramethyl thiuram (TMTD)disulfide accelerator.